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☐ 1: Theriogenology 1999 Jul 15;52(2):195-212

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Establishment of pluripotent cell lines from porcine preimplantation embryos.

Chen LR, Shiue YL, Bertolini L, Medrano JF, BonDurant RH, Anderson GB.

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Embryonic stem (ES) cells are pluripotent cells isolated from in vitro culture of preimplantation embryos. Experiments were undertaken to identify preimplantation embryonic stages and culture conditions under which pluripotent, porcine embryo-derived cell lines could be isolated. Cell lines were established from in vitro culture of intact, porcine early hatched blastocysts and isolated inner cell masses (ICM) from intermediate and late hatched blastocysts on feeder layers prepared from permanent mouse embryonic fibroblasts (STO). The cells of these porcine embryo-derived cell lines had a morphology similar to that of murine ES cells, but colony morphology was more epithelial-like. The cell lines retained a normal diploid karyotype, consistently expressed alkaline phosphatase activity, and survived cryopreservation. When subjected to in vitro differentiation, either spontaneous or induced, the embryo-derived cell lines differentiated extensively into a wide range of cell types representing the 3 embryonic germ layers. In vivo pluripotency of the cells was demonstrated by birth of a chimeric piglet, documented by pigmentation and DNA markers, and the ability to direct the development of nuclear-transfer embryos to the blastocyst stage. Such pluripotent embryo-derived cells provide a potential route for porcine genetic manipulation.

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